United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-4

[X] Original [ ] Amendment Number:

Contract Number	Contract Period	Title of Work Assignment
EP-W-08-019	Base Option Period Number	Environmental Assessment, Ecological Modeling, Risk Assessment, and Evaluative Analyses

Contractor: RESEARCH TRIANGLE INSTITUTE

Specify Section and Paragraph of Contract SOW:

Purpose: [X] Work Assignment Initiation [ ] Work Assignment Close-Out [ ] Work Assignment Amendment [ ] Incremental Funding [ ] Work Plan Approval

Periods of Performance: From: 03/11/09 To: 03/10/10

Comments:
The contractor shall prepare and deliver a workplan and cost estimate in accordance with the contract.

[ ] Superfund

Accounting and Appropriations Data

[X] Non-Superfund

Line	DC (Max 6)	Budget/FYa (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee	LOE
Previously Approved		
This Action		
Total	$0.00	356

Work Plan / Cost Estimate Approvals

Contractor WP Dated :	Cost/Fee:	LOE:
Cumulative Approved:	Cost/Fee: $0.00	LOE: 356

Work Assignment Manager Name: JASON LYNCH (Signature) (Date)	Branch/Mail Code 6204J Phone Number (202) 343-9257 Fax Number
Project Officer Name: SHERMAN E. FARVES (Signature) (Date)	Branch/Mail Code 3803R Phone Number 202-564-2185 Fax Number 202-564-2554
Other Agency Official Name (Signature) (Date)	Branch/Mail Code Phone Number Fax Number
Contracting Official Name: DEBRA A. MILLER (Signature) (Date)	Branch/Mail Code 3803R Phone Number 202-564-1041 Fax Number 202-565-2554

Contractor Acknowledgement of Receipt and Approval of Workplan *(Signature and Title)* | Date

EPA Form 1900-69 (Rev. 07-95)

Environmental Assessment, Ecological Modeling, Risk Assessment, and Evaluative Analyses

Contract: EP-W-08-019, Work Assignment: 1-4

Summary Information

Title:		Environmental Assessment, Ecological Modeling, Risk Assessment, and Evaluative Analyses
Period of Performance:	From:	03/11/09
	To:	03/10/10
Award Date:		
Total Funding:		

Procurement Management Roles

WORK ASSIGNMENT MANAGER:

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WASHINGTON, DC 20460

Mail Code: 6204J
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Fax Number:
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Attachments

Attachment Name
WA 1-4

WORK ASSIGNMENT
STATEMENT OF WORK

Title: Environmental Assessment, Ecological Modeling, Risk Assessment, and Evaluative Analyses

Contractor and Contract #: **RTI (EP-W-08-019)**

Work Assignment #: **1-4**

Estimated Level of Effort: 356 hours

I. BACKGROUND AND PURPOSE

The EPA's Clean Air Market Division (CAMD) is called on to complete environmental assessments to determine how changes in air quality, due to emission control programs, are impacting environmental outcomes such as acid deposition and surface water acidity. The Model of Acidification of Groundwater in Catchments (MAGIC) and the Photosynthetic and EvapoTranspiration - BioGeoChemical (PnET-BGC) model are state-of-the-art models designed to predict changes in surface water chemistry in acid-sensitive lakes and streams as a consequence of reductions in SO2 and NOx emissions. Models such as MAGIC and PnET-BGC help EPA assess the impact of current and proposed emissions reduction programs on surface water quality parameters such as pH and ANC and calculate critical loads. The outputs of these models are indicators of how changes in air quality impacts on surface water chemistry. In addition to quantifying changes in surface water quality parameters, it is also important to better understand and characterize which aquatic and terrestrial ecosystems are impacted or at risk of impact by nitrogen and sulfur deposition and to what extent. This requires identifying additional important indicators of the impacts of nitrogen and/or sulfur deposition, such as nutrient enrichment of soils, etc., and developing sensitivity maps and assessing uncertainty and risk to help EPA better focus research, management, and policy efforts.

The main purpose of this work assignment is to assist CAMD staff in employing the use of ecological models, such as MAGIC and PnET-BGC, to assess environmental outcomes as a result of emissions control strategies under regulatory actions; assessing ecosystem vulnerability by identifying and characterizing areas that are sensitive to surface water acidification, nutrient enrichment, and other important indicators of nitrogen and sulfur deposition to ecosystems; developing communications products regarding ecosystem modeling, responses to deposition, and sensitivities as well as developing assessment reports.

II. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

Task 1: Prepare Work Plan
The Contractor shall prepare a Work Plan in accordance with the terms and conditions of contract clauses B.2 entitled "Work Assignments" and B.3 entitled "Preparation and Submission of Work Plans."

Task 2: Ecosystem Model Assistance
The contractor will assist CAMD program staff in the development and running of ecological models, such as MAGIC and PnET-BGC in house. The contractor will assist with: 1) obtaining environmental data for three regions (Adirondack (ADR), New England (NE), Virginia (VA), and if hours permit additional locations to be completed at the direction Contractor Officer Representative (COR) or Contact Officer*. 2) data processing and manipulation 3) detail scientific model descriptions, 4) detail written instructions on how to use the model, and 5) direct guidance in running the model.

Task 3: Sensitivity and Risk Assessment Analysis
Conduct risk assessment to characterize ecosystem sensitivity and uncertainty to sulfur and nitrogen deposition for two study areas: ADR and VA. Develop new approaches to estimating uncertainty in parameters used in MAGIC and PnET-BGC. Communicate with WA COR on preliminary results to decide which parameters are of interest.

Task 4: Ecosystem Response Modeling
Conduct ecosystem modeling (i.e. MAGIC and PnET-BGC) to analyze scenarios for the three areas (ADR, NE, VA). Communicate with WA COR to receive emissions (SO2, NOx) and/or deposition (sulfate, nitrate) levels projected from policy and other scenarios. The contractor shall run ecological modeling and provide results to the WA COR.

*This subtask will not be completed without the direction of the Contractor Officer Representative (COR) or Contact Officer.

III. STATEMENT OF WORK TASKS

IV. DELIVERABLES (in all cases, memo, reports, tables, etc. shall be provided both as hard copies and as electronic copies)

Task 1: Prepare Work Plan
Work Plan - in accordance with clauses B.2 and B.3 of the contract

Task 2: Ecosystem Model Assistance
The contractor shall provide environmental data, written instructions and scientific model descriptions, other related material within 30 business days of receiving direction from WA COR.

Task 3: Sensitivity and Risk Assessment Analysis
The contractor shall provide preliminary results of the ecosystem sensitivity assessment - within 120 business days of receiving direction from WA COR. The contractor shall provide the final ecosystem sensitivity assessment results (in the format approved by the WA COR) - within 60 business days of WA COR agreement that modeling results are satisfactory.

Task 4: Ecosystem Response Modeling
The contractor shall provide preliminary results of ecological modeling - within 60 business days of receiving air quality modeling output from WA COR. The contractor shall provide the final modeling results (in the format approved by the WA COR) - within 30 business days of WA COR agreement that modeling results are satisfactory.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer	1
EPA Work Assignment Manager (i.e., COR)	1

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-5

[X] Original [ ] Amendment Number:

Contract Number	Contract Period	Title of Work Assignment
EP-W-08-019	Base Option Period Number	Calculation and Extrapolation of Acid Deposition Estimates from Data Fusion of CMAQ Modeling and CASTNET Ambient Observations

Contractor: RESEARCH TRIANGLE INSTITUTE

Specify Section and Paragraph of Contract SOW:

Purpose: [X] Work Assignment Initiation [ ] Work Assignment Close-Out [ ] Work Assignment Amendment [ ] Incremental Funding [ ] Work Plan Approval

Periods of Performance: From: 03/11/09 To: 03/10/10

Comments:
The contractor shall prepare and deliver a workplan and cost estimate in accordance with the contract.

[ ] Superfund

Accounting and Appropriations Data

[X] Non-Superfund

Line	DC (Max 6)	Budget/FYs (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee	LOE
Previously Approved		
This Action		
Total	$0.00	99

Work Plan / Cost Estimate Approvals

Contractor WP Dated :	Cost/Fee:	LOE:
Cumulative Approved:	Cost/Fee: $0.00	LOE: 99

Work Assignment Manager Name: MELISSA A. RURY	Branch/Mail Code 6204J
(Signature) (Date)	Phone Number (202) 343-9882
	Fax Number
Project Officer Name: SHERMAN E. FARVES	Branch/Mail Code 3803R
(Signature) (Date)	Phone Number 202-564-2185
	Fax Number 202-564-2554
Other Agency Official Name	Branch/Mail Code
(Signature) (Date)	Phone Number
	Fax Number
Contracting Official Name: DEBRA A. MILLER	Branch/Mail Code 3803R
(Signature) (Date)	Phone Number 202-564-1041
	Fax Number 202-565-2554

Contractor Acknowledgement of Receipt and Approval of Workplan *(Signature and Title)* | Date

EPA Form 1900-69 (Rev. 07-95)

Calculation and Extrapolation of Acid Deposition Estimates from Data Fusion of CMAQ Modeling and CASTNET Ambient Observations

Contract: EP-W-08-019, Work Assignment: 1-5

Summary Information

Title:		Calculation and Extrapolation of Acid Deposition Estimates from Data Fusion of CMAQ Modeling and CASTNET Ambient Observations
Period of Performance:	From:	03/11/09
	To:	03/10/10
Award Date:		
Total Funding:		

Procurement Management Roles

WORK ASSIGNMENT MANAGER:

U.S. E.P.A.
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Fax Number:
E-Mail Address: rury.melissa@epa.gov

Attachments

Attachment Name
1-5

WORK ASSIGNMENT
STATEMENT OF WORK

Title: Calculation and Extrapolation of Acid Deposition Estimates from Data Fusion of CMAQ Modeling and CASTNET Ambient Observations

Work Assignment #: WA 1-5

Estimated Level of Effort: 99 hours

I. INTRODUCTION

Congress passed the Clean Air Act Amendments in 1990 (CAAA). Title IV of this legislation called for a ten million ton reduction of SO_2 and a reduction of NO_x emissions entering the atmosphere from electric utility sources relative to baseline 1980 emissions. The Clean Air Markets Division (CAMD), within the Environmental Protection Agency (EPA), is responsible for implementing Title IV of the CAAA. In addition, EPA is required by several Congressional and other mandates to assess the effectiveness of air pollution control efforts. These mandates include Title IX of the CAAA, the National Acid Precipitation Assessment Program (NAPAP), the Government Performance and Results Act (GPRA), the OMB Program Assessment Rating Tool (PART), and the U.S. Canada Air Quality Agreement. One measure of effectiveness of these efforts is whether sustained reductions in the amount of atmospheric deposition over broad geographic regions are occurring.

The Clean Air Status and Trends Network (CASTNET) and the National Atmospheric Deposition Program (NADP) were developed to monitor dry and wet acid deposition, respectively. Monitoring site locations are predominately rural by design to assess the relationship between regional atmospheric pollution and changes in regional patterns of acid deposition. CASTNET also includes measurements of rural ozone and the chemical constituents of $PM_{2.5}$. CASTNET and NADP provide data where sensitive ecosystems are located and provide insight into natural background levels of pollutants where urban influences are minimal. These data provide needed information to scientists and policy analysts to study and evaluate numerous environmental effects, particularly those caused by regional sources of emissions for which long range transport plays an important role. These two networks are essential tools for meeting the mandates for monitoring and assessment of environmental policy as specified above. CAMD has a primary role and responsibility in the administration and operation of CASTNET and NADP.

In 1986, EPA established the National Dry Deposition Network (NDDN) to obtain field data on rural deposition patterns and trends at different locations throughout the United States. CASTNET began operation in 1991 after the CAAA necessitated a long-term, national program to monitor the status and trends of air pollution emissions, ambient air quality and pollutant deposition. The 50 NDDN sites that were operation at the time were transferred to CASTNET. CASTNET now comprises of over 80 monitoring sites across the United States, with the longest data records primarily at eastern sites. EPA's Office of Air and Radiation operates a majority of the monitoring stations; however, the National Park Service operates approximately one third of the stations in National Parks or other Class I areas in cooperation with the EPA. CASTNET has provided data on the dry deposition component of total acid deposition, ground level ozone and other forms of atmospheric pollution for over 18 years at many of these long-term sites.

Each CASTNET site typically measures:

Weekly average atmospheric concentrations of nitrate, ammonium, sulfate (as SO_{2-}), nitric acid and other base cations

Hourly concentrations of ambient ozone

Hourly average meteorological parameters required for calculating dry deposition velocities

CASTNET is considered the nation's primary source for atmospheric data to estimate dry acidic deposition and to provide data on rural ozone levels. Used in conjunction with other national monitoring networks, CASTNET provides useful information on determining the effectiveness of national emission control programs.

Dry deposition rates are calculated using atmospheric concentrations, meteorological data, and information on land use, vegetation and surface conditions. Because of the interdependency of wet and dry deposition, NADP wet deposition measurements are collected within 60 km of all CASTNET sites, with most of the sites being collocated. This provides an estimate in trends and spatial patterns of total acidic deposition (wet + dry) across the United States.

Regional estimates of air concentrations have historically been based upon interpolation techniques involving a simple inverse distance weighting algorithm. CAMD is interested in determining alternative approaches as specified below to estimate spatial patterns of air pollution concentration surfaces and dry deposition from the CASTNET observations. Based upon the efficacy of the investigated approaches, CAMD will be in a better position to meet assessment and reporting needs.

This work assignment is not to repeat any previous work performed under work assignment 2-15, 3-15 or 4-22. In 2006, the current subcontractor under RTI, AER, developed a methodology for interpolating CASTNET measurements using CMAQ modeling results and validated the methodology against IMPROVE measurements. In 2007, RTI's subcontractor, AER, performed a literature review on available dry deposition calculation methods. This work assignment is to build upon the completed work and develop a method for estimating regional dry deposition fluxes. This work assignment is an extensive of WA 1-05.

II. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this work assignment are consistent with the areas of analyses authorized in section III. Under work assignment 1-05, RTI's subcontractor, AER, completed Tasks 1 and 2.1. The remaining tasks under section III shall be completed under the extension.

III. STATEMENT OF WORK TASKS

1. Contractor shall develop and deliver a workplan and a cost estimate.

2. Optimal interpolation method for calculating dry deposition fluxes. Dry deposition fluxes are not directly measured by CASTNET, but are estimated based on measurements of concentrations and estimates of dry deposition velocities. The deposition velocities are modeled using meteorological parameters, land use types, vegetation and surface conditions. The interpolation of dry deposition fluxes is, therefore, subject to uncertainties. The contractor shall investigate the optimal method for interpolating dry deposition fluxes as follows:

1. The contractor shall obtain dry deposition velocity estimates for all weekly observations from all CASTNET sites from EPA. The contractor shall compare the CASTNET deposition velocities against the dry deposition estimates calculated in the current release of CMAQ.
2. The contractor shall propose a technique for evaluating their results to EPA. EPA will approve the technique that the contractor has proposed. The contractor shall evaluate the dry deposition algorithm for performance using the approved method.
3. The contractor shall calculate concentrations interpolated between sites using CMAQ gridded concentrations and weighted concentrations measured at CASTNET sites before combining them into an interpolated field of dry deposition fluxes using the calculated velocities above.
4. The contractor shall generate maps of the calculated deposition fluxes for different periods (seasonal and annual).
5. The contractor shall analyze the pros and cons for the original method of flux interpolation and the new method and make a recommendation for an optimal method of estimating dry deposition fluxes.

The contractor shall develop detailed documentation for these methods and analyses of calculating and extrapolating CASTNET point estimates into regional estimates of measured concentrations and dry deposition fluxes. Such documentation shall include detailed algorithms (such as the conversion from standard temperature and pressure to local temperature and pressure) and associated code necessary to implement the approach.

3. The contractor shall develop and apply the method approved by the WA COR to CASTNET data and chemical species to be finalized in technical direction (such as ozone, SO_{2-}, sulfate, nitrate, HNO_3, total nitrate and ammonium concentrations and dry deposition of sulfate, nitrate, ammonium, SO_2 and HNO_{3--}) for a year which estimates are available from the monitoring network and for which the COR approved CMAQ modeling already exists. EPA shall provide any necessary inputs such as CASTNET data, and/or CMAQ model runs and meteorology measurements. The method will be implemented in software specified in writing by the WA COR and agreed to by the contractor based on the contractor suggestion as to the software environment that will be the most efficient and cost effective for the government.

4. The contractor shall develop detailed graphics and evaluation metrics that indicate the efficacy of the approach. Such graphics are envisioned to include maps of pollutants of interest and relevant error statistics

given the chosen method.

5. The contractor shall deliver software code, documentation, and necessary auxiliary data files for implementing the method in-house at CAMD. The contractor shall travel to EPA for 1-2 days set up the software code and explain the documentation and implementation process.

The tasks under this work assignment are an extension of the previous workplan. The workplan from RTI shall be completed and work will begin on developing the code. The remaining tasks will be completed under this first option year with the existing funding from the previous work assignment.

V. DELIVERABLES

Workplan	**30 days from execution or as specified in the contractor, whichever is earlier.**
Progress reports	**Quarterly from time of execution**
Execution of method in code	**5 months form execution**
Draft summary paper of findings	**8 months from execution**
Final paper of findings	**9 months from execution**
Draft of all code, data sets and documentation	**9 months from execution**
Final of code, data sets and documentation	**10 months from execution**

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Debra Miller)	1
EPA Work Assignment Manager COR (Melissa Rury)	1
EPA Contract-Level COR (Vincent DiGiovanni)	1

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-6

[X] Original [ ] Amendment Number:

Contract Number	Contract Period	Title of Work Assignment
EP-W-08-019	Base Option Period Number 1	Emissions Data Integration

Contractor: RESEARCH TRIANGLE INSTITUTE

Specify Section and Paragraph of Contract SOW:

Purpose: [X] Work Assignment Initiation [ ] Work Assignment Close-Out [ ] Work Assignment Amendment [ ] Incremental Funding [ ] Work Plan Approval

Periods of Performance: From: 03/23/09 To: 08/01/09

Comments:
The contractor shall prepare and deliver and workplan and cost estimate in accordance with the contract.

[ ] Superfund

Accounting and Appropriations Data

[X] Non-Superfund

Line	DC (Max 6)	Budget/FYs (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee	LOE
Previously Approved		
This Action		
Total	$0.00	840

Work Plan / Cost Estimate Approvals

Contractor WP Dated :	Cost/Fee:	LOE:
Cumulative Approved:	Cost/Fee: $0.00	LOE: 840

Work Assignment Manager Name: PETER KOKOPELI (Signature) (Date)	Branch/Mail Code 6204J Phone Number (202) 343-9085 Fax Number
Project Officer Name: SHERMAN E. FARVES (Signature) (Date)	Branch/Mail Code 3803R Phone Number 202-564-2185 Fax Number 202-565-2554
Other Agency Official Name (Signature) (Date)	Branch/Mail Code Phone Number Fax Number
Contracting Official Name: DEBRA A. MILLER (Signature) (Date)	Branch/Mail Code 3803R Phone Number 202-564-1041 Fax Number 202-565-2554

Contractor Acknowledgement of Receipt and Approval of Workplan *(Signature and Title)* | Date

EPA Form 1900-69 (Rev. 07-95)

Summary Information

Title: Emissions Data Integration
Period of Performance: From: 03/23/09
To: 08/01/09
Award Date:
Total Funding:

Procurement Management Roles

WORK ASSIGNMENT MANAGER:

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Attachments

Attachment Name
1-6

WORK ASSIGNMENT
STATEMENT OF WORK

Title:	Emissions Data Integration
Contractor and Contract #:	RTI, EP-W-08-019
Work Assignment #:	1-6
Estimated Level of Effort:	840 Hours

I. BACKGROUND AND PURPOSE

U.S. Environmental Protection Agency's (EPA) Clean Air Markets Division (CAMD) is responsible for collecting and reporting on stationary source emissions under the Acid Rain Program, NOx Budget Program, Clean Air Interstate Rule and the Clean Air Mercury Rule. CAMD also manages the Clean Air Status and Trends Network (CASTNET) to monitor ambient air concentration and deposition of pollutants and to determine the effectiveness of nationwide emission reduction programs. Information presented in papers, the division web site and progress reports frequently relies on analyses of emissions and air monitoring data and geographic information systems (GIS).

EDAT (Emissions Data Analysis Tool) utilizes data residing in the CAMD Oracle database system to perform ad-hoc analyses of emissions and air quality data. Currently, the data mart is the target for most queries. CAMD has undertaken a project to re-engineer the process and data systems associated with emissions, monitoring plan, and certification data. The new ECMPS (Emissions Collection and Monitoring Plan System), coming online in 2009, will make expanded emissions and monitor data available for the first time. This data will be of considerable value both for analyses and auditing. In particular, this work assignment will include converting the Target Tool for Audits (TTFA) from and EDR-based system to the ECMPS database schema.

Data integration efforts are intended to bring together CAMD and non-CAMD data, such as Ventyx-Velocity Suite, for the purpose of augmenting our current unit information or to add entirely new categories of data such as fuel usage. The source may be flat files, xml, web services or tables replicated from other EPA databases. Data transformation, i.e., extraction, aggregating, cleansing and interpretation is intended to present elements in a readily useable format. The ultimate organization of the data should provide maximum flexibility and applicability yet be practical to create and maintain.

Geospatial data is represented by points, lines, polygons, and complex geographic features. It encompasses both original and interpreted geospatial data derived through remote sensing including but not limited to images and raster data sets, aerial photographs, and other forms of geospatial data or data sets in both digitized and non-digitized forms. EPA standards require that locational information, such as latitude/longitude coordinates be collected and documented with environmental and related data, and not precluding, other critical location identification data, such as depth, height, elevation, altitude and/or street address, that may be needed to satisfy individual program or project needs. Geospatial data shall be developed and maintained in accordance with the key data life cycle phases: Data Planning; Data Collection and Acquisition; Data Processing and Documentation; Data Storage and Access, and; Data Maintenance and Retirement.

II. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this work assignment are consistent with the contracts Statement of Work, *"Task I. Technical Support Activities"*. In particular, the sections below apply:

i. "Geographical Information Systems (GIS) Support and Development";
ii. "Program Evaluation";
iii. "Data Systems, Information Technology, Web, and Computer Systems Support . . . to the extent required to make . . . outputs usable in the CAMD data system, the contractor shall perform technical support activities necessary for requirements analysis, specification and documentation preparation, system design, development, coding, testing, operations, version control, quality assurance, quality control, and web support."

III. STATEMENT OF WORK TASKS

Task 1 – Prepare Work Plan

1. The Contractor shall prepare a Work Plan in accordance with the terms and conditions of contract clauses entitled "Work Assignments" and entitled "Preparation and Submission of Work Plans".

Task 2 – Target Tool for Audits (TTFA) Application Development

2. The contractor shall provide software application development to modify TTFA including the following:
   - 2.1. Deprecate the current batch process handling EDRs. All data will reside in Oracle tables on the CAMD database server 'Cork' (cork.customs.epa.gov) - primarily the ECMPS schema.
   - 2.2. Create materialized views (MV) in the TTFA schema to support criteria that need quarterly pre-processing. All business logic for batch processing will reside either in the MVs or related stored procs. Metadata, if needed, will reside in the TTFA schema. Data needed for quarterly batch analysis:
     - 2.2.1. Hourly concentration data
     - 2.2.2. Load bin data
     - 2.2.3. MODC data
     - 2.2.4. Date of completion for last RATA
     - 2.2.5. Batch Database Config Params:
     - 2.2.6. Control limit cap hi (constant - database config param)
     - 2.2.7. Control limit cap lo (constant - database config param)
     - 2.2.8. Total OOB Days Total
     - 2.2.9. Most used load bin
   - 2.3. TTFA requires a connection to the CAMD Oracle database and the ability to query data from the TTFA schema. TTFA will reuse the following data access components of EDAT:
     - 2.3.1. QueryDataTable - Accepts an SQL string and return a DataTable. QueryDataTable is passed as a delegate to the Criterion QueryDelegate property
     - 2.3.2. EDATContext (indirectly) - provides unencrypted connection string information and security
     - 2.3.3. DataDirect 2.2 Data Provider - for connecting to Oracle without requiring Oracle client installation on the user's computer.
   - 2.4. Convert current web client application to desktop EDAT extension with these changes:
     - 2.4.1. a simplified C5 screen for Probe Leaks (CO2 control chart)
     - 2.4.2. a new report format that allows the user to combine the results of all criteria onto one grid
     - 2.4.3. a parameter combo box which controls the available criteria in a checklist box
     - 2.4.4. update Help documents to .chm format and new content to reflect criteria changes
   - 2.5. Create a user-interface-independent representation of the business domain with a central class, ParameterQuery, which implements the following interfaces:
     - 2.5.1. EPA.OAR.OAP.CAMD.TTFA.IParameterQuery - This interface enables the storage of a collection of objects with common query filter properties (e.g. States, Regions, Quarters, etc.)
     - 2.5.2. System.ComponentModel.INotifyPropertyChanging -Provides event notification that a property of an IParameterQuery instance will be changed.
     - 2.5.3. System.ComponentModel.INotifyPropertyChanged - Provides event notification that a property of an IParameterQuery object has been changed.
     - 2.5.4. The IParameterQuery interface will contain the following public properties.
     - 2.5.5. DataTable - the current DataTable representation of the query.
     - 2.5.6. QueryDelegate - A reference to a method, typically in the user interface layer, which accepts a SQL string a returns a DataTable object. This property simplifies the separation of business logic layer from the data query mechanism, which could change to another database or data provider. It also enables the reuse of EDAT data query functionality and thread security.
     - 2.5.7. ParameterQueryFilter - Stores the property representations of the parameter query filter options, ParameterQueryFilter implements the IParameterQueryFilter interface.
     - 2.5.8. The IParameterQueryFilter interface will be a representation of criterion query parameters and will contain the following public property:
     - 2.5.9. SQL - The string representation of the SQL WHERE clause for the criterion.
     - 2.5.10. A base ParameterQueryFilter object will contain the query parameter that is common across most, if not all, parameters and criteria. Each specific parameter will inherit from the ParameterQueryFilter base class and implement the IParameterQueryFilter interface.
     - 2.5.11. Most property setters will call the protected OnPropertyChanging and OnPropertyChanged event methods, which in turn broadcast property change notifications.
     - 2.5.12. ParameterQueryFilter class properties can also be marked optionally with an SQLConverter attribute. The

SQLConverter (inherits from TypeConverter) class converts property values into SQL fragments for use in the SQL where clause.

2.6. Two types of output from TTFA :
  2.6.1. List of units sent to states on a quarterly basis. Currently this list is manually compiled from the individual criteria data grids. Provide a new reporting screen that allows the user to compile all criteria results onto one grid with one row per unit, i.e., an outer join of all criteria results on UNIT_ID. Probably the simplest way to implement this is to persist the last sql for each criteria on the client and combine them to create a report.
  2.6.2. Charts and data used by EMB analysts to investigate individual units and in presentations to explain CAMD's auditing work. Provide a save button to allow the user to save either the data grid as an Excel 2003 file or the chart image as a .bmp (or both).

2.7. Deploy TTFA using ClickOnce as a module to EDAT
  2.7.1. EDAT will contain a module button for TTFA similar to the Unit Select.
  2.7.2. TTFA will share EDAT configuration, currently: Visual Studio 2005; MS Enterprise Library 3.0; .NET Framework v 2.0 sp2; Data Direct 2.2; Chart Fx 6.2 with the Statistics Extension and Infragistics NetAdvantage for Windows Forms 7.3.

Task 3 – EDAT Data Integration

3. The contractor shall provide data integration and transformation support including:
  3.1. Propose a table schema definition to replace the current EDAT.UNIT_HRLY from ECMPS data. Monitor level data will have to be apportioned to unit level using a standard methodology.
    3.1.1. Create a test version of the table and evaluate results. Determine if before and after ECMPS is an issue and if so propose a remedy.
    3.1.2. Upon approval, create a production version of the new UNIT_HRLY and add a job, if needed, to the existing EDAT job chain.
  3.2. Create a test version of UNIT_DAILY_CONTROL_USE table for selected units and years derived from hourly emissions. The new table will present unit level aggregated data for each control, an estimation of the number of hours the control operated, and the removal efficiency on that day. It will be used to determine not only which units have controls but when they are actually in use.
    3.2.1. Present evaluation of test results and proceed with full production version with approval and add a job, if needed, to the existing EDAT job chain.
  3.3. Create packages on MAPLE MSSQL instance to import Ventyx
    3.3.1. 'CEMS Map', fuels and generation data as a monthly job
    3.3.2. unit characteristics with a primary key from the 'CEMS Map' (above) and selected additional fields from Ventyx as a quarterly job
  3.4. Create a stored procedure on cork.customs.epa.gov that will maintain new tables using the existing job chain infrastructure

IV. DELIVERABLES

Task 1: work plan – in accordance with contract
Task 2: Source code, executables, documents – July 1, 2009
Task 3: Source code, executables, documents, data files – August 1, 2009

Distribution of Deliverables

Addressee	Copies
EPA Contracting Officer	1 (cover only)
EPA Work Assignment Manager	1

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-7

[X] Original [ ] Amendment Number:

Contract Number	Contract Period	Title of Work Assignment
EP-W-08-019	Base Option Period Number I	2010 NAPAP Report to Congress

Contractor	Specify Section and Paragraph of Contract SOW
RESEARCH TRIANGLE INSTITUTE	

Purpose: [X] Work Assignment Initiation [ ] Work Assignment Close-Out [ ] Work Assignment Amendment [ ] Incremental Funding [ ] Work Plan Approval

Periods of Performance: From: 07/22/09 To: 03/10/10

Comments:
The contractor shall prepare and deliver a workplan and cost estimate in accordance with the attached Work Assignment (Statement of Work) and the contract.

[ ] Superfund

Accounting and Appropriations Data

[X] Non-Superfund

Line	DC (Max 6)	Budget/FYs (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee	LOE
Previously Approved		
This Action		
Total	$0.00	2,600

Work Plan / Cost Estimate Approvals

Contractor WP Dated :	Cost/Fee:	LOE:
Cumulative Approved:	Cost/Fee: $0.00	LOE: 2,600

Work Assignment Manager Name COLLEEN M. MASON (Signature) (Date)	Branch/Mail Code Phone Number (202) 343-9641 Fax Number (202) 343-2360
Project Officer Name SHERMAN E. FARVES (Signature) (Date)	Branch/Mail Code 3803R Phone Number (202) 564-2185 Fax Number (202) 565-2554
Other Agency Official Name (Signature) (Date)	Branch/Mail Code Phone Number Fax Number
Contracting Official Name DEBRA A. MILLER (Signature) (Date)	Branch/Mail Code 3803R Phone Number (202) 564-1041 Fax Number (202) 565-2554

Contractor Acknowledgement of Receipt and Approval of Workplan *(Signature and Title)*	Date

Summary Information

Title: 2010 NAPAP Report to Congress
Period of Performance: From: 07/22/09
To: 03/10/10
Award Date:
Total Funding:

Procurement Management Roles

WORK ASSIGNMENT MANAGER:

U.S. E.P.A.
Attn: COLLEEN M. MASON
1200 PENNSYLVANIA AVE, NW
WASHINGTON, DC 20460

Mail Code:
Phone Number: (202) 343-9641
Fax Number: (202) 343-2360
E-Mail Address: mason.colleen@epa.gov

Attachments

Attachment Name
2010 NAPAP Report to Congress